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The AMERICAN HOROLOGIST

IN THE INTEREST OF THE HOROLOGICAL AND JEWELRY INDUSTRY

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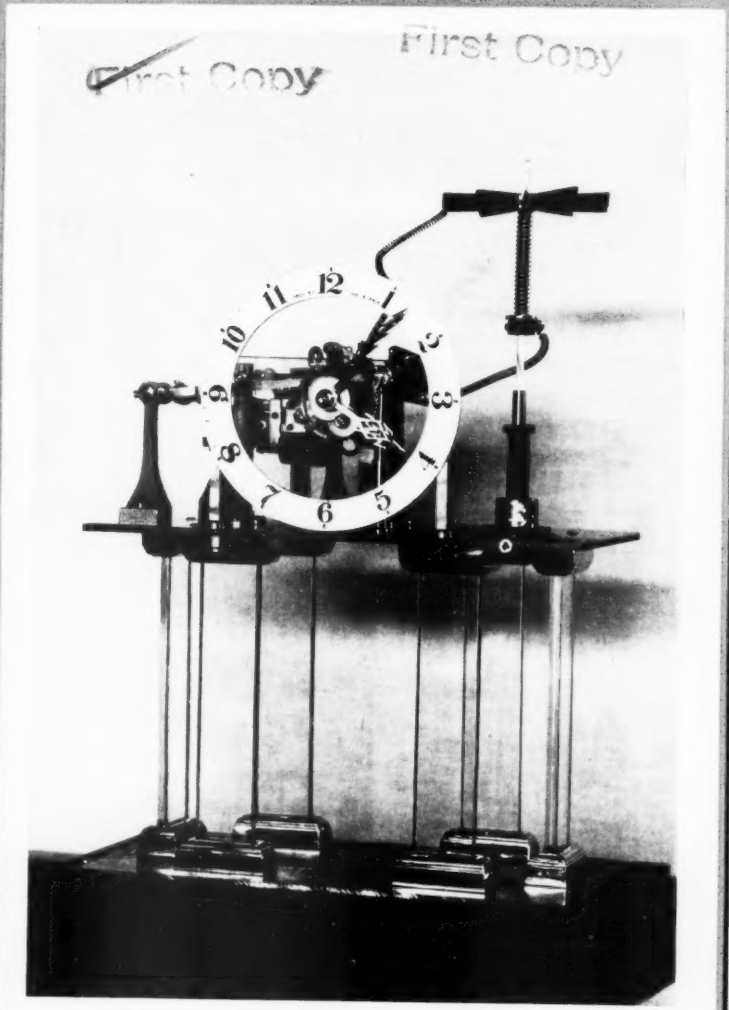

Vol. V JULY, 1940 No. 7

The American Horologist

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THE AMERICAN HOROLOGIST

Published monthly by Roberts Publishing Company, Denver, Colorado, in the interest of Horological and Jewelry Industry. To inculcate the principles of Fraternal and Commercial Advancement; to promote the welfare and enhance the betterment of the industry; to cultivate good fellowship and a higher degree of knowledge in Horology and Jewelry industry.

PRICE

25c per copy, $2.00 per year in United States and Canada. $2.50 per year in all foreign countries. Members of U. H. A. A. receive the paper as part of their membership benefits.

CHANGE OF ADDRESS

Change of address must be made prior to 5th of month to effect the forthcoming issue of the magazine. Both old and new addresses must be given.

ADVERTISING RATES ON REQUEST

Contributions and advertising material must be received not later than the 25th of the month preceding publication.

THE AMERICAN HOROLOGIST

Official National Publication of the United Horological Association of America, Inc., and all its affiliates, who operate as a united body toward the advancement and upliftment of the Horological and Jewelry Industry.

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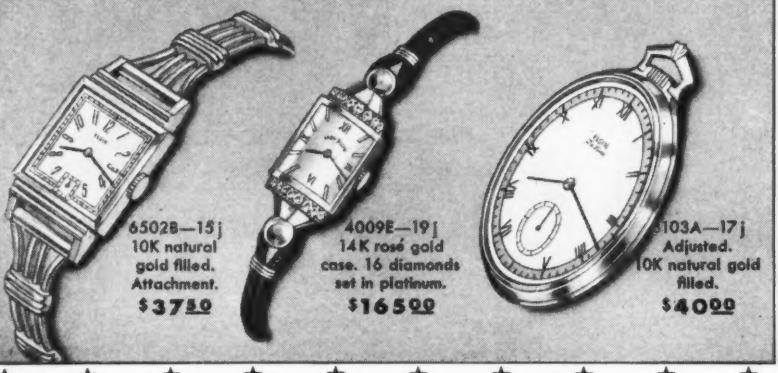

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A broader use has been made of the increasingly popular rosé gold. Dials and crystals show greater variety than ever. Dials are black, rosé, two-tone silver. Some are curved, others spherical. Crystals are high-curved and dome type, as well as plain.

A new movement, offering greater style possibilities for Lady Elgin watches, has been added to the line. The exclusive Elginium hairspring* and Beryl-X balance—both rustproof and non-magnetic—are now standard in all Elgin wrist watches, thus assuring greater strength and accuracy.

News is the keynote of Elgins for 1941. News crowds every page of the catalog which presents them. It's the sort of news your customers and prospects will welcome—act upon.

A strong demand for the newest Elgins is expected. In order to be sure of prompt delivery, it is suggested that you go through the catalog carefully, study each model, and get your order in early.

*Patent Nos. 1,974,695 and 2,072,489

Copr. 1940 by Elgin National Watch Company, Elgin, Ill.

21 JEWELS
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19 JEWELS
4303B—14K natural gold filled. High curved crystal. Gold filled bracelet. $52.50
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Address of Walter J. Kleinlein of Waltham Watch Company at United Horological Association of America Convention, Cleveland, Ohio, May 5th, 1940

Mr. Chairman, Fellow Members of the United Horological Association of America and Friends:

During the time allotted to me this evening I wish to discuss how knowledge of adjusting simplifies wrist watch problems with several examples which may be useful in the repair shop.

It is obvious that each branch of watch making is important in developing the time keeping performance of a watch. For example, it is important that the Technical Department lay out the model scientifically on paper and that blueprints be supplied with definite specifications and tolerances.

It is important that the Machine Department build equipment consisting of dies, jigs, presses, cutters, and small tools for manufacturing. It is also very important that the Manufacturing Department produces the parts exactly as per specifications.

When the parts are supplied in production quantities, the work is then turned over to the Assembling Division. The first operation in the Assembling Division consists of applying the jewels, then assembling the train and winding mechanism. After this comes placing the pallet in alignment with the balance and escape wheel; then adjusting the fork and guard pin length to the rollers.

Fitting up the balance and hairspring is very important because herein lies the opportunity for much erratic timekeeping. It is important that the balance be true and in poise, the hairspring firmly attached to the collet, true vibrated, overcoiled properly and firmly studded at the other end. Then it is important that the hairspring be leveled, centered and the overcoil properly fitted between the regulator pins, and finally oiling, and inspection of the motion when wound and with the mainspring let down approximately twenty-four hours.

The watch is then ready for dialing and preliminary timing. Up to this point the operations are quite similar for all grades of watches. If, however, the watch is of adjusted quality, additional refinements are required; consisting of adjusting to temperature, isochronism, and positions.

The positions in which a watch is tested consists of either three, five or six positions. A five-position watch, for example, would be tested dial up, dial down, pendant up, pendant right, and pendant left, while a wrist watch would seldom be tested in more than three positions consisting of dial up, dial down, and pendant down. All Waltham Premier Watches are rated in at least three positions.

Adjusting is generally associated with high class pocket watches having but few seconds variations. Many of the principles of adjusting, however, may be applied to jeweled watches generally, including wrist watches with results that cannot be matched by ignoring such factors in the day's work. It is this feature which justifies the statement that "knowledge of adjusting simplifies wrist watch problems."

It is not commonly recognized that whenever we make an alteration that corrects and improves the rate in one position as compared to another, we practice position adjusting, regardless as to the size of the watch. The outstanding difference lies in the tolerances for variations which may be permitted in a wrist watch

as compared to a pocket watch. A railroad watch, for example, may be successfully and profitably adjusted to a five position over all tolerance of ten or twelve seconds. While a wrist watch may require a tolerance of a minute or more in a three position test, we all know that the adjustment is not something tangible which may be removed or replaced at will, like a wheel, for example, but that it is a condition brought about by both scientific construction and skilled craftsmanship.

In other words, an alarm clock type of watch could not be adjusted to the tolerance of the fine pocket watch or a wrist watch, even by a skilled adjuster.

The first requirement in adjusting a watch to position is equal motion of the balance in the dial up, and dial down positions: approximately one and a half turns when wound, and one and a quarter turns when twenty-four hours down. This equal arc of motion is your assurance that the pivots and jewels are in good order and that the hairspring does not touch the balance arm cock or overcoil during extreme oscillation of the balance.

It is not necessary to run a watch twenty-four hours to determine whether the rate is equal in the two positions if the arcs are equal and reach their full range of oscillation in an equal number of seconds from a dead start. You may expect the time in each position to attain the established tolerances of any commercial watch.

Let me elaborate on this point. The balance of a 16 size watch, for example, in the dial up position may reach its full length of oscillation in fifty seconds from a dead start. It is necessary in the dial down position that it reach the full arc of oscillation in exactly the same number of seconds.

Pinning points of the hairspring are not as important in wrist watches as in pocket watches, but a closely adjusted watch should have the terminal points of attachment of the hairspring theoretically correct. The spring should be properly centered and leveled and the regulator pins correctly adjusted to the coil.

The vertical arcs of motion should be just under one and a quarter turns when nearly wound and approximately one turn when down 24 hours.

Why knowledge of adjusting simplifies wrist watch problems may be summarized as follows:

The value of different arcs of motion of the balance is quickly recognized by the adjuster as a clue to trouble such as escapement error or damaged pivots.

Second, the effect of out of poise on the vertical rate in changing arcs of motion is obvious. This often makes it possible to locate the trouble, and to correct an erratic wrist

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watch rate because of understanding the poise and motion theory.

Third, the effect of correctly adjusting the regulator pins to the overcoil of a wrist watch is certainly more highly appreciated by the trained adjuster.

Fourth, judicious oiling of a properly, constructed watch is important in maintaining performance over a period of guarantee.

Now let us analyze on the blackboard one or two examples showing that the cause of variation in pocket watches affects wrist watches in the same way.

I. Position Rate Example

Comparison of a 12 size pocket watch rate and 8¾ ligne wrist watch rate caused by marred upper balance pivot in each watch and the rates after pivots were refinished.

Note difference in arc of motion of the balances before and after alterations.

ORIGINAL RATES

12 size	8¾ ligne	Arc of motion wound up
D.U. 10 sec. +	D.U. 40 sec. +	
D.D. 1 sec. +	D.D. 5 sec. —	
P.U. 7 sec. —	P.D. 20 sec. —	1 turn
—	—	1½ turn
17 sec.	60 sec.	1 turn

AFTER REFINISHING PIVOTS

12 size	8¾ ligne	Arc of motion wound up
D.U. 0 sec.	D.U. 8 sec. —	1½ turn
D.D. 0 sec.	D.D. 8 sec. —	1½ turn
P.U. 6 sec. —	P.D. 22 sec. —	1¼ turn
—	—	
6 sec.	14 sec.	

II. Isochronal Error Example

Comparison of erratic rates of a 16 size pocket watch and an 8¾ ligne wrist watch caused by common poise and motion trouble.

The original erratic three day rates could not be regulated and Isochronal Tests comparing the first six hours rate after winding, with the last six hours rate of the 24 hour run are submitted to demonstrate the cause.

16 SIZE POCKET WATCH

Original 3-Day Rate	Three-day rate after alteration
30 sec. —	10 sec. +
40 sec. +	14 sec. +
60 sec. —	12 sec. +

Rate first six hours—P.U. 2 sec+ / Rate first six hours—P.U. 2.01—
Rate last six hours—P.U. 6 sec.— / Rate last six hours—P.U. 1.5 +
Motion wound, P.U. 1½ turn / Motion wound—P.U. 1¼ turn
Motion 24 hours, P.U. 1⅛ turn / Motion 24 hours—P.U. 1 turn

8¾ Ligne Wrist Watch—B.C.

Original 3-Day Rate	3-Day Rate After Alteration
2m —	½m. —
½m. —	1m. —
3m. —	1m. —

Rate first six hours—P.D. 6 sec. + / Rate first six hours—P.D. 4 sec. +
Rate last six hours—P.D. 30 sec. — / Rate last six hours—P.D. 4 sec. —
Motion wound—P.D. 1½ turn / Motion wound—P.D. 1¼ turn
Motion 24 hours—P.D. 1⅛ turn / Motion 24 hours—P.D. 1 turn

The erratic rates of the two watches could not be regulated originally and the alteration which made regulation possible consisted of poising the balance and reducing the arc of motion so that it would not exceed 1¼ turns vertically at any time. Slightly weaker mainsprings were used.

For extreme demonstration of improvement compare the original and last six hour period rates of the wrist watch. The first six hours of the original rate was running at the rate of 24 seconds per day fast and the last six hours at the rate of two minutes a day slow.

It is of course realized that the alterations require a little time but whatever time is necessary will be saved on erratic watches that are frequently returned to the house. It is also not necessary to always make isochronal tests, but rather to look for the trouble mentioned in certain types of erratic timekeepers which "come back" frequently.

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Questions and Answers

(Questions by members and readers, answers by National Technical Board and other authentic authorative sources, What are your problems?)

QUESTION:—Why do screws and steady pins stick?

ANSWER:—by L. T. Christopherson, Technical Board.

The screw and steady pins would stick for various reasons. One and primary reason would be that some watchmaker did not see fit to entirely disassemble movement—the process of cleaning.

Another reason: Did not rotate watch long enough in the rinse solution.

Any other reasons would be faulty manufacture or abuses by watchmakers. I will state, however, that I have had no difficulty in this section with the trouble you mention.

If at any future time that you have a puzzle—just send it to me and I will answer it to the best of my ability.

QUESTION: — How to tighten center pinion to wheel when it becomes loose?

ANSWER:—By W. H. Samelius, UHAA Technical Board.

If the center wheel is fastened to the center pinion, being staked on, the pinion leaves being riveted over the wheel, the same as the balance wheel is fastened to the staff, using a hollow round nose punch, should fasten the wheel to the pinion securely.

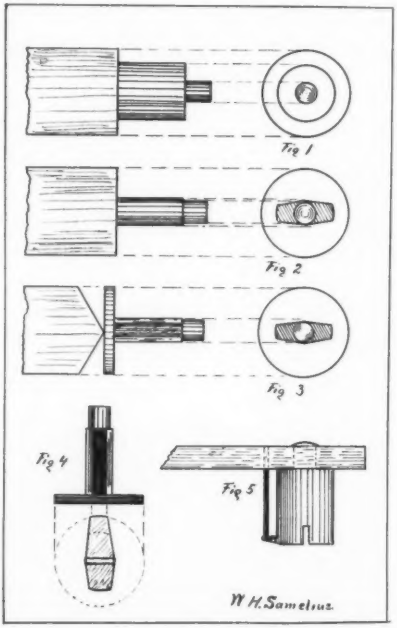
If the seat for the wheel is too low, it would be necessary to put the pinion in the lathe, cutting a new seat for the wheel, making the riveting shoulder higher. If it is for an American watch, where the center wheel becomes loose from the arbor, there is a special four lipped punch that comes with the staking tool for that particular purpose. This four lipped punch will set the riveting, or indent the shoulder into the brass wheel, securing the wheel so that it cannot turn on the arbor.

Repairing a Regulator

By

W. H. SAMELIUS, *Director*
Elgin Watchmakers College

Occasionally we are called on to make a new locking pin for a Swiss regulator, which is easily done if proper steps are taken. We first select a peice of brass wire, its diameter being slightly larger than twice the distance of the two holes in the regulator arm.



Cut stock down to fit the hole in the regulator, leaving the stud a little longer than the thickness of the regulator for riveting purposes. The next diameter is cut down allowing space between the regulator pin and the lock proper, for the hairspring. See Figures No. 1 and No. 5.

Then file off two sides, leaving the lock elongated, as in Fig. No. 2 The lock is now cut off from the main wire, leaving the flange of the required thickness as in fig. No. 3.

The lock may then be held in a pin

vise, cutting away the outside flange, leaving the small lip as shown in Figure No. 4, and at the same time cutting the screw slot. The lock may then be attached to the regulator arm by slightly heading the stud sufficient to hold the lock in place, but free enough to be turned by a screwdriver as shown in Figure No. 5.

Who Is Correct?

Under this heading last month appeared a questionable subject. Our President called the Editor's of "Business Week" attention to the matter, and here is their reply.

"Dear Mr. Sommer:

The American Horologist carries the kind of comment on the Shell Motor Oil Companies watch deal that I guessed it would carry when I received your advance warning. It shows that your organization is on its toes in watching out for the interest of its members."

R. B. Smith, Editor
"Business Week"
A McGraw-Hill Publication

Horologist of Royalty

By LOUISE HANNAH KOHR

A North Hollywood paper quoting from the Horologist stated that W. M. Matchette, prominent jeweler of Canoga Park, California, had completed a scenario founded on the royalty of France.

Motion picture executives read it, and have evinced great interest in the scenario. Mr. Matchette is well fitted for writing such a scenario. But for the French Revolution he might have been living today in the inner circles of royalty, if not indeed on the throne himself.

Portland, Oregon Guild

Held a dinner meeting party June 3 at Bixby's. A report of National convention activity and a Workmanship contest, which proved to be very interesting, with valuable prizes from the various manufacturers and distributors in Portland. H. Sabro,

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Each assortment contains 72 different Balance Staffs for Swiss Bracelet Watches in the Most popular models from 3¼ to 13 ligne.

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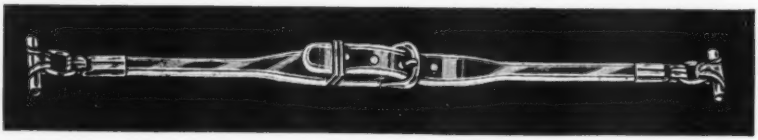

THIS **NEW** feminine counterpart of the sensationally popular Men's **PERMA-FLEX** Watch Straps will also prove a smash sales' hit throughout the country. *The ladies will adore it*—for its ultra-smart appearance—for its colorful sparkle—for its flexible, easy, light-as-air *feel* on the wrist.

Made of the new plastic **VINYLITE***—it *s-t-r-e-t-c-h-e-s*—is Washable—is Water, Perspiration and Acid Proof—indestructible—Non-flammable—Resistant to Oil, Grease, Alcohol and practically all Chemicals—cannot Shrink or Warp—yields to the slightest pressure because it is *permanently* resilient and flexible.

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4.—Seven popular colors, as follows: *Clear Transparent—White—Amber —Garnet—Blue—Green and Black.* Each **Lady PERMA-FLEX** Watch Strap is in an individual box—with Cellophane Cover to display its beauty.

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Postoffices Go Horological

By Paul Vandervoort II

The vice-president in charge of the "curious names for postoffices department" says that the horological industry has not been neglected. A thumbing of the latest Postal Guide reveals there are a number of towns in the United States whose names have horological connections.

Towns in Kentucky and New York glorify the watch and clock. For in New York is a town named CLOCKVILLE, in Kentucky, a postoffice called WATCH.

Horologsits can pick up a few parts, too. In Missouri, they'll find CASE; in Kentucky is CROWN. Georgia has WINDER and DIAL, and STEM may be found in North Carolina. Arkansas furnishes HAND, CRYSTAL is in Idaho, CYLINDER in Iowa and SPRING in Texas.

Some brand names are also available. ELGIN, in Illinois and other states; WALTHAM in several states, including Massachusetts, and WATERBURY found in Connecticut and other states. Oklahoma has INGERSOLL.

Accuracy has not been forgotten, for in Illinois is the slogan which all horologists follow — TIMEWELL.

An interesting collection, either for personal pleasure or display advertising purposes may be had at small cost, by securing postmarks of postoffices having horological connections.

The technique is simple. Mail a letter to the postmaster of the office from which postmark is desired, enclosing self-addressed, stamped envelope and a note asking postmaster to postmark and return.

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Clark Building Pittsburgh, Pa.

Book Reviews

Waltham Watch Company announces their new 40 page booklet, "Watchmakers Hand Book" available to all watchmakers. This booklet is a valuable bench companion.

"Rules and Practice for Adjusting Watches," Mr. Kleinlein, the author, has added 3 chapters to his book in response to many requests for practical explanation concerning irregular position rates, of "Self Compensating Hair Springs and Monometallic Balances."

These three new chapters will prove most profitable to the Horologist.

The price of the book remains the same, $3.50 postpaid through THE AMERICAN HOROLOGIST.

A New Trade Reference Book

The INTERNATIONAL DICTIONARY for the Precious Metal, Gemstone, Jewelry, Silverware, Cutlery and Horological Trade, by Herbert Oelschlaegel, Secretary of the BIBOA in 8 languages—20 collaborators—830 pages cloth bound.

The price, $5.50 postpaid through THE AMERICAN HOROLOGIST.

Electrical Timekeeping

By F. Hope-Jones, M.I.E.E., F.R.A.S.
With a foreword by
Dr. H. Spencer-Jones, MA.,Sc.D.,F.R.S.

An entirely New Work reviewing a century of research and achievement in the application of Electricity to Horology. A digest of the historical chapters of "Electric Clocks" by the same author is included in this new book consisting of 296 pages cloth bound, 27 chapters, 130 illustrations.

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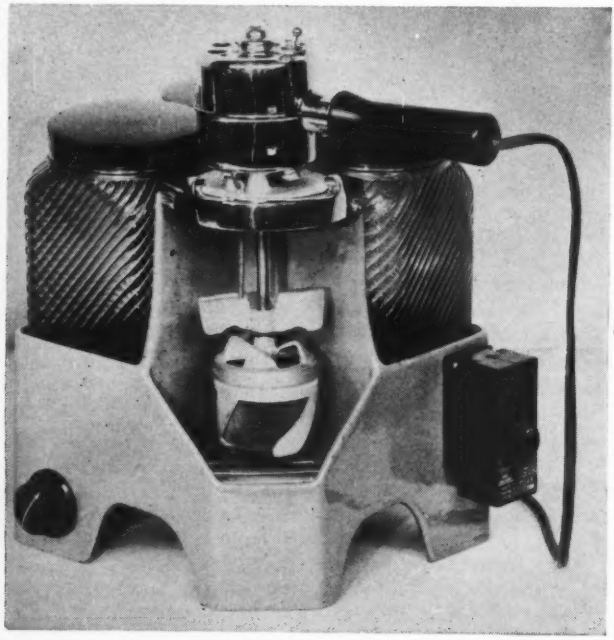
You can pay more but you can't buy better cleaning results.



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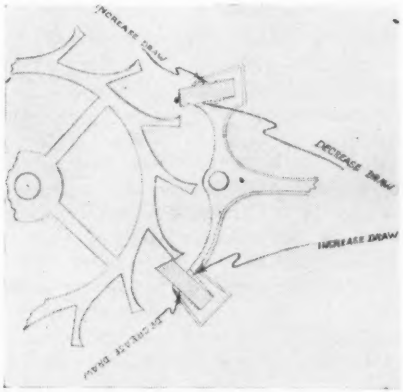
Ask About Our Payment Plan

Procedure for Altering Defective Draw

By Carl Lundgren

In order to create draw, the teeth of the escape wheel are undercut and the locking faces of the pallets are inclined; so that the pressure of the teeth on the locking faces produces a drawing-in motion of the pallets toward the escape wheel. The ultimate action of this motion will be to bring the pallet fork against the banking pins and hold it there. The safety roller is then perfectly free and the pallet in position for the next vibration.



Some watches have insufficient draw, especially some old single roller models. In these the pallet fork will not remain in contact with the banking pin; therefore, causing the guard pin to contact the roller table. If the watch doesn't stop, the rate will then be seriously effected. On the other opposite extreme, we have the watch that has surplus of draw. Many of the small models are affected with this serious defect. In these watches the balance will be found to have stopped with the roller jewel just entering the fork. In other words the impact of the balance was not sufficient to release the fork. This usually occurs on the discharge pallet, because most circular escapements have more draw on the discharge side.

A diamond charged lap facilitates the operation when it is necessary to grind the pallet slots. A copper lap mounted on a taper is used. After the diamond powder is rolled into the lap, the outer edge of the back of the lap is turned thin enough to allow the lap to enter the pallet slot without binding. The back edge of the lap is turned very thin, after the diamond powder is applied; in order to prevent the thin edge from bending while being charged.

In order to increase the draw the pallets are tilted or inclined toward the impulse and locking surfaces of the escape wheel. If it is necessary to decrease the draw the pallets should be inclined away from the locking and impulse surfaces of the escape wheel. It is not necessary to incline the pallets a greta amount in order to secure the desired effect. It should be noted in the drawing that the pallet slot is ground at an angle. Sometimes just the one pallet can be moved or inclined; and the desired effect will be secured without appreciably altering the drop.

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Davidson's Precision Clock

Designed and made by Mr. F. N. Davidson, Bellefontaine, Ohio. It took from 1925 to 1939 to construct in spare time. The clock is 94 inches overall, height of top 68 inches, width of top 20 inches.

Technical Description

Graham dead beat escapement (beats seconds). Pallets turned on lathe in one piece, insuring theoretically correct circles. Garnet Pallet Jewels, and brass escape wheel. Center, third and escape wheel pivots running in fine sapphire jewels.

Great wheel, hour wheel and rear pivot of center wheel in double floating bearings of brass and steel. Wheels cut from solid sheet brass. Pinions cut from fine crucible steel, hardened and tempered. Train wheel teeth and leaves of pinions cut according to an epicycloid curve. Plates, heavy one-eighth inch hard rolled brass, with bearings set in with screws and friction. Maintaining power spring cut from sheet of solid steel. Verge made of steel and brass. (Poised) Attachment for putting clock in beat actuated by means of a compound lever, thereby keeping impulse bearing always on center. Pallet arbor and point of suspension of pendulum rod in straight line.

Dual mercurial compensated pendulum with auxiliary regulator. Pendulum suspended from three-sixteenth inch solid steel plate, bolted to back of case. Dial hand wrought. Minute, hour and second circles made of brass. Back made of satin finished aluminum. Raised numerals. Hands hand wrought.

Honor Roll Trophy, 1940

Each year THE AMERICAN HOROLOGIST awards to the highest membershiped state a Trophy indicating the winners position of supremacy in activity. This award is made according to records compiled for the first part of the year closing prior to National Convention.

This year it was agreed by Delegates at Convention that the winner should be determined not entirely for membership but for the largest membershiped State in accordance to the State population, this would be fair to large and small alike and would indicate the activity of each state far better.

The judges for 1940 have now rendered their decision which was again checked over by accountants to be positive of their finding and decisions.

Conn. Horological Assn., First place and holder of trophy for this year.
Kansas—second place.
Iowa—third place.
R. I.—4th place.
Minn.—5th place.
Colo.—6th place.
Okla.—7th place.
Wisc.—8th place.
Nebr.—9th place.
Missouri—10th place.
Arizona—11th place.

Ohio—12th place.
Oregon—13th place.
Mass.—14th place.
Indiana—15th place.
Michigan—16th place.
New Jersey—17th place.
Pennsylvania—18th place.
Virginia—19th place.
Illinois—20th place.

Each state now knowing their position should determine to move up to first place for the possession trophy which will be awarded at close of year and shall become the association's permanent property.

Contact the National office regarding your plans, or for plans concerning membership drives. Other States are planning extensive campaigns. why not you?

Reading left to right, seated, P. E. Loomis, President; Orville R .Hagans, National Secretary; D. A. Wells, State Secretary. Standing, H. D. Howard, Treasurer; Geo. Wild, Bradley Inst.; Dale Berthelson.

Sterling silver card presented to National Secretary.

Kansas State Horological Association

Second State Convention at Salina June 22-23 was a true success. The largest gathering ever experienced by the association assures the entire state of success in their every action and desire.

Partial group, Kansas State Convention

Guest speakers, Dean George Wild, Bradley, National Executive Secretary, and many others took part.

The new officers: President, P. E. Loomis, Newton; Vice President, Dale Berthelson, Dodge City; Treasurer; H. D. Howard, Wichita; Secretary and National Trustee, D. A. Wells, Hutchinson. After all business had been completed, a splendid banquet and entertainment took place with the association's own quartet rendering vocal numbers. There was over 200 present.

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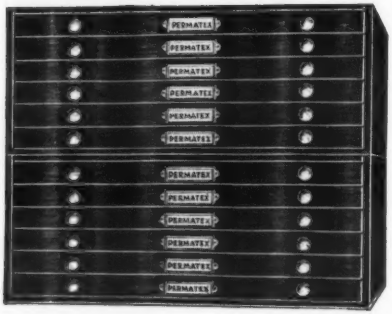

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No more disgruntled, dissatisfied customers with discolored or fallen-out crystals . . . all this is ended when you begin selling Permatex Unbreakable Crystals. YOUR CUSTOMERS NEED AND WANT THESE

1224 CRYSTALS

Drawer Steel Add-A-Unit Cabinet

LIFETIME SERVICE with Above System

You will constantly be informed of discontinued sizes and of numbers that are becoming obsolete, so that you will not overstock on the wrong numbers—A CRYSTAL SERVICE OFFERED BY NO OTHER COMPANY!

Made in America—in Our Own Factory

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not shrink and is non-inflammable. Permatex crystals, made of this new material, are the last word!

No more drawers full of stuff that is worthless . . . no dissatisfied customers with discolored or fallen-out crystals . . . all this is ended when you begin selling Permatex Unbreakable Crystals. YOUR CUSTOMERS NEED AND WANT THESE CRYSTALS!

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July twelfth from one to five in the afternoon

Watchmakers' Registery

Every watchmaker and jeweler can serve their government and self by registering their qualifications at once.

During the past great war our United States needed men who could manipulate small tools, etc., but found our trade unprepared to serve.

One reason was that no National Association existed, through which contact could be made. Today there is but one agency capable of this momentous task of registering all watchmakers, and that is the U. H. A. of A. who operates on a national scale and has the machinery to care for this great national task of registering.

There is no obligation or cost to this registration. It is open to all men. The registery shall not become public property and its contents shall be used to classify men in the event our war department or industry, serving our government, desires men with certain classifications, ability and versatility.

The war department and industry feel the following classifications are most desirable and can be classified through a uniform questionnaire.

First, those with executive and supervisory ability.

Second, those who could be used for research work.

Third, those who could be used as instructors.

Fourth, those who could be used for bench work.

Fifth, those who could be used for submarine and fine instrument knowledge.

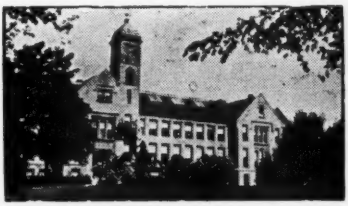
Sixth, those who are versatile.

This registery is being made possible through the U.H.A.A., with the cooperation of our jewelry trade papers. Only trade publications interested in the cooperation and protective planning for our government's safety and welfare are taking part.

Registration questionnaires may be secured from any horological guild or association, or from the National Association's headquerters at 3226 East Colfax Avenue, Denver, Colo.

All registration questionnaires should be mailed direct to the National headquarters.

"The Pathway to Success"



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Cincinnati Guild

Held their regular monthly meeting, Friday, June 7, at 8 p. m. at Hotel Sinton. Attendance was lower than usual due to a heavy rain.

Mr. Frank Foegler gave a report on the National Convention. Carl Wagner, a new member, was present.

Technical discussions and Aircraft Instrument furnished the evening's entertainment.

Elmer G. Fisher,
Corres. Secy.

Connecticut Horological Association, Inc.

Held their fifth annual convention June 2, 1940 at Niantic, Connecticut, Hotel Morton.

Reports are that this was one of the most harmonious and progressive conventions ever held in their state.

Officers elected for the ensuing year are as follows:

President, Chas. Stow, Hartford —also Pres. of Hartford Guild.

Vice-Pres., A. H. Rosenbeck, New Haven.

Rec. Secy., E. Seibel, Bridgeport.

Corres. Secy., T. W. Burt, Willimantick.

Treasurer, Chas. Stiles, Hartford.

E. Seibel, Recording Sec.

In Rebuke to Misquoted Statements

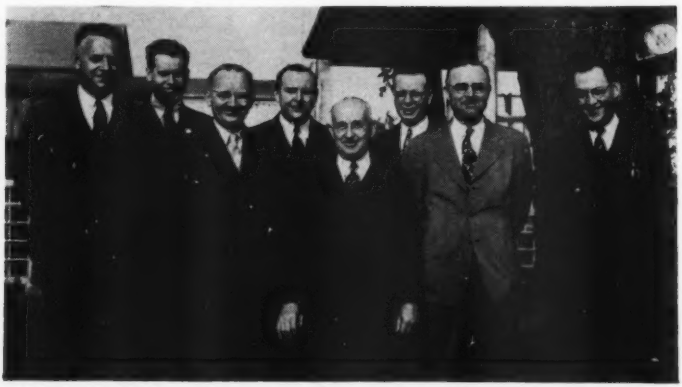
A trade paper made several misstatements regarding U.H.A.A. and its officers' remarks, therefore we quote the true statements for your enlightenment. The auditing committee definitely made a report, and a lengthy one, showing all books in splendid condition and the national deficit definitely reduced and only showing a deficit equal to the last month's expenses. This is an enviable record for any association or business.

The secretary's statements regarding California conditions to the effect that "It was saddening to note the inroads of an element in our profession in California which has hindered that state in securing legislation; also for the partial disintegration of a once powerful state association. But was thankful for the courage of those in California who would not sell out to the detrimental factions. (Those with the courage are principally the Southern Organization and their paper, "Horology.")

The misquoted statements regarding the outlook for watchmakers' legislation. This was the correct statement: "The outlook for new laws this year was not bright, also it was not so good for several states who would attempt legislation in 1941, and stated reasons. First, lack of their preparedness, membership power and education necessary to cope with political maneuverings, etc."

And last, the inference that we looked forward to a merging with National Jewelers Association: "We hope to see the day that the A.R.N.J.A. and N.C.J.A. and U.H.A.A. would hold their conventions jointly and that these three great national bodies would establish a National Council made up from the three national units to work together and bring about a closer unification of ideas and principles for the best interest of the industry."

We truly regret the necessity of calling these metters to your attention when it involves others, but truth undistorted must be known to all or right will not prevail. A true convention erport may be found in June issue The AMERICAN HOROLOGIST, AND JEWELER CIRCULAR-KEYSTONE.



Connecticut officers, reading left to right: Andrews Rosenbeck, Vice President, New Haven; Chas. Stiles, Treasurer, Hartford; E. Seibel, Recording Secretary, Bridgeport; Earl Becker, Retiring Secretary; Chas. Stone, President, Hartford; Col. Wm. Bright, National Vice President, visitor, Boston, Mass.; Joseph Dahl, Retiring President, Waterbury; Theodore W. Burt, Corresponding Secretary.

Have You Met These Men?

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President
Rhode Island

C. F. ARNOLD
Vice President,
State Marshallton

E. J. GEHRINGER
President,
Detroit

CHAS. S. STOWE
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Connecticut

W. A. BROWNSTEIN
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MAURICE ETHIER
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DONALD M. HITCHCOCK
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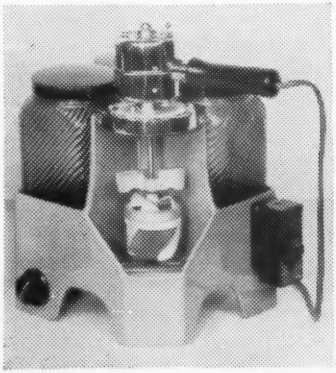

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AERONAUTICAL INSTRUMENT SERVICE

Aircraft Instruments

EDITOR'S NOTE—Aeronautical Instrument Service is a subject untouched by publications in the Horological field, or in fact by any publication. In September, 1938, THE AMERICAN HOROLOGIST inaugurated such an educational service via prepared illustrated lectures to be used by U. H. A. A. organizations for the purpose of broadening our members' scope of knowledge in this field, which offered additional remuneration to those far-sighted enough to avail themselves of such knowledge.

ARTICLE NO. 10

(Continued from June Issue)

Temperature errors.—The effect of temperature on the metal parts of the instrument has already been discussed. These errors can be nearly eliminated by proper construction of the instrument. The other temperature error which has also been discussed is produced by changes in the air density, with temperature. It is neglected except where extreme accuracy is desired and can only be corrected by the use of the computer as described under sensitive altimeters.

Zero errors.—The most troublesome error of the atmospheric pressure type of altimeter is due to the variation in the atmospheric pressure at any given altitude. This error can not be eliminated in any altimeter which is actuated by the atmospheric pressure. The only means for correction for this is by shifting the dial to read zero before the aircraft leaves the ground. Any change in atmospherice pressure occurring during flight will cause the instrument to be in error when the landing is made.

Calibration and repair of service altimeters.—Apparatus for testing.— The apparatus for testing altimeters is—

An air-tight chamber in which the instrument can be placed and subjected to a reduction in air pressure (partial vacuum). This is usually a glass bell jar of the form shown in Figure 32. Its edge is ground true and makes an air-tight seal with the ground top surface of a cast-iron plate. Vaseline spread on the surface of the plate facilitates the seal. The apparatus described below is connected by suitable tubing and connections to the interior of the air-tight chamber.

A means for accurately determining the partial vacuum to which the instruments are subjected.

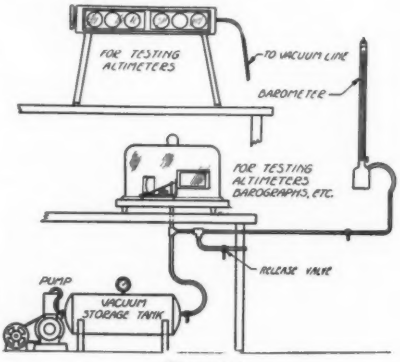

Figure 32

A means to produce the partial vacuum: any suitable hand or power-driven vacuum pump may be used. Another means of obtaining a partial vacuum, which has been successfully used with small chambers and which is economical, is the employment of an "aspirator" such as is commonly used by chemists. The aspirator is attached to an ordinary water faucet and the flow of water through the Venturi produces the suction.

Two sensitive needle valves should be employed, one in the line between

the chamber and the vacuum pump, and the other in the line between the chamber and the atmosphere.

Procedure.—The instrument should first be examined for mechanical defects. Next it should be given a calibration and a hysteresis test which is accomplished as follows:

Tests for scale error.—Each instrument should be tested for a period of at least 24 hours. Then with the instrument at room temperature (approximately 20° C.) it should be so adjusted that the pointer will indicate zero when the altimeter is subjected to an external pressure corresponding to zero altitude. This will necessitate the use of some pressure inside the chamber for stations above sea level. If a bell jar is used it may be necessary to start the test at a barometric altitude corresponding to the elevation of the station. Without changing the adjustment the instrument should be subjected successively to pressures as given by a chart corresponding to the altitudes (for which a tolerance is specified) given in Table II. During the above test the pressure in the vacuum chamber as indicated by the barometer (or other standard used) will be reduced at a rate corresponding to an increase in altitude of approximately 500 feet per minute. A rest period of at least one minute must follow the decrease in pressure before the instrument reading is taken. At some time during this rest period, and after the instrument has been vibrated, the errors in the instrument reading will not exceed the values given in Table II for each test point of the scale. The movement of the pointer will be free from backlash and from any irregular motion when the pressure is varied uniformly.

TABLE II

True altitude, in feet	Permissible error in altimeters, in feet			
	0-5,000-foot range	0-15,000-foot range	0-30,000-foot range	0-50,000-foot range
0	0	0	0	0
500	20			
1,000	20	50		
1,500	30			
2,000	40	50	100	
2,500	50			
3,000	60	50		
3,500	70			
4,000	80	100	100	
4,500	90			
5,000	100	100		200
6,000		100	100	
7,000		150		
8,000		150	200	
9,000		150		
10,000		200	200	200
11,000		200		
True altitude, in feet	Permissible error in altimeters, in feet			
	0-5,000-foot range	0-15,000-foot range	0-30,000-foot range	0-50,000-foot range
12,000		250	200	
13,000		250		
14,000		300	300	
15,000		300		300
16,000			300	
18,000			300	
20,000			400	400
22,000			400	
24,000			500	
25,000				500
26,000			500	
28,000			600	
30,000			600	600
35,000				700
40,000				800
45,000				900
50,000				1,000

Hysteresis test.—A hysteresis test will be made as follows: When the pressure corresponding to the upper limit of the scale has been reached in the scale-error test, air will be admitted to the vacuum chamber at a rate corresponding to a decrease in altitude of approximately 500 feet per minute. A rest period of not less than 1 minute nor more than 10 minutes should follow the increase in pressure before the instrument reading is made. At some time during this rest period and after the instru-

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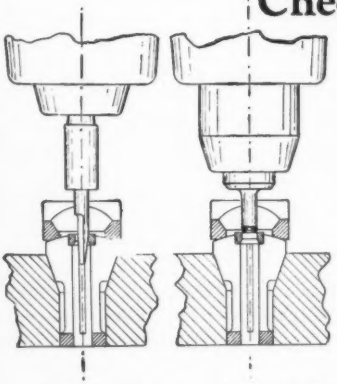
ment has been vibrated the readings of the instrument should not differ from the readings for the corresponding altitude in the calibration test by more than 1 per cent of the total range of the instrument.

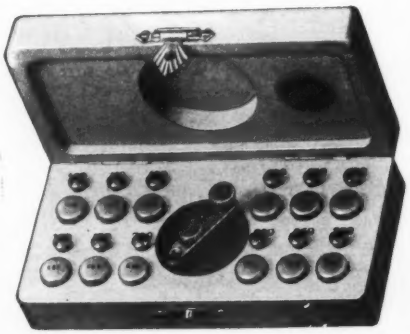
In this test the chamber in which the instruments are mounted should be vibrated by tapping with a wooden or lead mallet to simulate the vibration which will be incurred during actual flight.

Installation of altimeters.—The altimeter is complete within itself and, therefore, its installation is very simple compared with that of some other instruments. The only precaution to be observed is to leave open to the air a small hole in the case just under the zero adjusting knob. This is necessary in order that the pressure in the case will be equal to that of the air through which the aircraft is flying.

Air-speed indicators.—For navigational purposes.—In cross-country flying, it is necessary to form some estimate of the time required between landing fields. A ground-speed meter would be the best instrument for this purpose if a reliable one were available. Until such a one is developed, the air-speed indicator may be used. This instrument shows the speed of the airplane relative to the air through which it is moving. In still air and at low altitudes, the air speed is also the ground speed. If a wind is blowing, the ground speed is the vector sum of the true air speed and the wind. If the aircraft is flying more than a few hundred feet above sea level, a correction must be made of the indicated air speed to find the true air speed. The method of obtaining this correction will be explained later. The air-speed indicator informs the pilot whether or not the performance of the airplane is what should be expected. Generally,

Check and Bushing Set





Jewels now are replaced in old original settings, or set in new brass bushings easily and quickly. Set contains 12 sizes of chucks and bushings with plate for holding chucks.

Plate is free (not fastened) on base of jeweling tool, thus it can be used on ANY MAKE of JEWELING TOOL, and a perfectly centered hole is cut.

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the pilot can form some estimate of the ground speed by observing the time required to pass over known towns or other landmarks, and from this and the air speed determine the wind speed. In this manner he will be enabled to select for his course the altitude having the most favorable wind. For example, if the aircraft is known to make about 70 miles per hour and there is no wind, a trip of an hour and a half should cover about 105 miles. If there is a favorable wind of about 20 miles per hour, a trip of the same length of time should cover about 135 miles. In practice, however, the air speed is greatly dependent on altitude, on whether or not the airplane is climbing, and on the position of the throttle. For exact work, therefore, it is necessary to use the air-speed indicator.

For handling an airplane.—In handling or maneuvering an airplane, the air-speed reading is very useful for determining the best climbing or gliding conditions, the most economical speed for straight flying, whether the maximum speed attained in a dive is within the limit of safety for the airplane, and whether the airplane is near the stalling speed. The pilot should be able to determine the stalling speed without the use of an air-speed indicator, and should be trained without it.

General principle.—There are two distinct parts to an air-speed indicator, namely, a pressure tube and an indicator. With but few exceptions, the indicator consists of a diaphragm sufficiently light to move under very slight changes of pressure, yet strong enough to stand pressures nearly double any to which it is normally subjected. The remainder of the instrument is a device for transmitting the motion of the diaphragm, or diaphragms, to the pointer. An attempt is generally made to so design this mechanism that the scale will be nearly uniform. For any one airplane flying horizontally in a given altitude, both the sustaining force and the head resistance are approximately proportional to the product of air density **d** by the square of the speed **v**. This can be expressed by the equation:

$$P = k\ d\ V^2$$

(Pressure equals a constant times the density times the velocity squared.) Hence, this class of air-speed indicator is often referred to as a $P\text{-}V^2$ indicator. It is valuable because it indicates buoyancy and head resistance rather than actual air speed. It might well be termed an air-force indicator. As the following paragraphs will show, some types of instruments indicate directly the air speed, and others indicate directly the air force. Knowing the air density, which can readliy be found if the altitude and temperature are given, it is possible to calculate air speed from air force, and vice versa.

(Continued Next Issue)

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St. Louis Guild

On June 9th the Greater St. Louis Horological Guild held their first annual picnic at the Windsor Rod & Reel Club at Horine, Mo. Good weather, good food and a not-so-good ball game (our side lost) contributed to the pleasure of the 55 members who attended with their families and friends. There were many other contests and valuable attendance prizes were plentiful.

The picnic was an unqualified success, and members of the St. Louis Guild are looking forward to the moonlight excursion to be held on Tuesday, July 16th, on the new luxury steamer, the S. S. Admiral. We were very happy to have several out-of-town members of the Horological Guild at the picnic, and we hope that many more members from nearby Illinois and Missouri towns will join us on our boat ride.

Russell W. Vance, Publicity.

Sterling silver card presented to National Secretary.

Meeting June 16th, 1940 Columbia, Mo.

The Horologists in the central part of Missouri met June 16th at the Cinclair Pennant Hotel in Columbia with the Missouri Retail Jewelers Association and formed a Guild adopting the name of "Central Missouri Horological Guild," comprising about fifteen cities within a radius of fifty miles of Columbia. They have decided to make Columbia the permanent meeting place the third Thursday of each month. A group of men from St. Louis and three of the state officers, Ray Gable, Joseph E. Obmann and Clint Holt assisted in the formation of this Guild which is affiliated with the State and National Associations. The officers elected are as follows:

President—Carl Thomas, Centralia.
Vice-Pres.—A. R. Jones, Boonville.
Secretary—Clinton Holt, Jefferson City.
Treasurer—Frank Lamb, Columbia.

Any horologist interested and located in this area please notify the Secretary, Clinton Holt, 126 East Circle Drive, Jefferson City, Mo.

Worcester and Worcester County Guild No. 2

Held regular monthly meeting June 3.

A technical address by Warren Frazer on watch escapements was heard by 50 watchmakers.

A report of the National Convention at Cleveland last month was given by J. Edward Bogage, Secretary of the local guild and chairman of the National Trustees.

Col. Wm. H. Bright of Boston, Vice-President of the United Horological Association of America was the guest speaker.

At the next meeting, a ladies auxiliary will be formed and plans will be made for a tri-state meeting of the Massachusetts, Connecticut, and Rhode Islands Guilds.

J. Edward Bogage,
Secretary.

Early American Clock Dials
The duplication, repair or refinishing our specialty. Estimates cheerfully given.
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LANDAW BROTHERS
Watch Material & Jewelers' Supplies
406 Clark Building, Pittsburgh, Pa.

Horological Society of Cleveland

"Round Table" meetings are being held the first Wednesday in each month at 6:00 p.m. at the Hippodrome Cafeteria, Hippodrome Building, Cleveland. Wish more of you watchmakers in and near Cleveland would come down and join in.

Now for our double barrelled notice of coming events: August 18—Our big picnic. Akron and Cleveland joining forces as usual for a bang-up good time for all, at Fell Lake Park, Northfield Road. In case you haven't been around recently, each year our picnics are growing in popularity. It's a basket picnic and we usually furnish coffee and ice cream. Our program is slick. We run off our games and contests in a grand manner. Usually have a very attractive grand prize.

For our second item. Early in September we are planning a dinner meetingto be held in Cleveland. You put this down for a "must attend." We are planning a good program with guest speakers. Frank Fogler of Cincinnati, will be there to tell you all about Legislation, what they have done and its importance to every one. Mr. Fogler is State Chairman of the Legislative Committee.

For further information and tickets for these events please see E. E. Elgin, Hickox Building, Cleveland, Ohio.

H. E. VOLMAR, JR.,
Corresponding Sec'y.

Cover Page

Radio Clock, constructed by Mr. Chas. A. Braun, Weiser, Idaho, which has been in operation for several years.

YOU CAN BUY THE WORLD'S FINEST LOUPE FOR $.00045 PER WORKING HOUR

This is a Bausch & Lomb 3" watchmakers' glass. Its price is 90c. Figured on a single year's use, it costs less than a twentieth of a cent per working hour.

Can you afford to penalize your eyes with eyestrain and impaired efficiency when so fine a loupe costs you so very little?

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Your own jobber can supply you with a variety of Bausch & Lomb American-made loupes.

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386 BAUSCH ST. ROCHESTER, N. Y.

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Appointed by
National President, J. P. Sommer

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Geo. Neisslien, Pa., Chairman
Ben Heald, Wisconsin
Emanel Seibel, Conn.
Robert Taylor, N. Y.
I. E. Binstock, Pa.
National Office, Colo.
Dave Barker, Colo. Council

No. 2—Standing Resolutions.
Col. Wm. H. Bright, Mass., Chairman
Joseph Obmann, Missouri
Lee Avery, Wisconsin

No. 3—Watch Inspection Week.
C. C. Heidinger, Okla., Chairman
Col. Wm. H. Bright, Mass.
Robert J. McConway, Pa.

No. 4—Convention Finance.
L. W. Heimberger, Ohio, Chairman
National Office, Colo.
R. C. Schenk, Minn.

No. 5—National Convention.
J. P. Sommer, Pa., Chairman
Orville R. Hagans, Colo.

No. 6—Membership Committee.
J. P. Sommer, Pa., Chairman
J. Edward Bogage, Mass.
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No. 7—Legislative Committee.
B. W. Heald, Wis., Chairman
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No. 8—Book Library Committee.
Frank Foegler, Chairman, Ohio
Wm. H. Samelius, Ill.
John J. Bowman, Pa.

No. 9—Publication Committee.
Orville R. Hagans, Colo., Chairman
L. W. Heimberger, Ohio
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No. 10—Legal Advisers.
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No. 11—Museum Committee.
Wm. H. Samelius, Ill., Chairman
Joe Schwartz, Ill.
Fred M. Lund, Ill.
Jess I. Hansen, Colo.
National Office, Colo. Custodian
Daniel Brown, Colo. Ass't. Custodian

No. 12—Building Committee.
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Frank Foegler, Ohio
D. L. Thompson, Colo.
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No. 13—Nat'l. Workmanship Committee.
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No. 14—Bookkeeping Committee.
John De Vogel, N. Y., Chairman

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No. 16—Historian.
Jos. A. H. Voss, Kentucky

No. 17—Schools Standard & Curriculums Committee.
Emanuel Seibel, Conn., Chairman
W. H. Samelius, Ill.
George Wild, Ill.
E. C. Schattschneider, Wis.
John J. Bowman, Pa.
George J. Schlehr, N. Y.

No. 18—Schools Accrediting Committee.
B. W. Heald, Wis., Chairman
J. P. Sommer, Pres., UHAA, Pa.
Orville R. Hagans, Secy. UHAA, Colo.
Emanuel Seibel, Conn.
Jos. A. Beimel, Pa.
Charles Braun, Idaho
Fred M. Lund, Ill.

One man from each State Board of Examiners, where Licensing Laws for Watchmakers are in effect.

All members of this Committee must be Members of UHA of A.

Michigan State Activity

The Detroit Guild is holding an outing on the lake during the month of July. All guilds in Michigan will be invited to attend.

The Grand Rapids Guild is planning a picnic for July and to show the cooperation that is being given and received.

Last year the jewelers closed for a half day; this year all jewelrs in Grand Rapids will declare a legal holiday, Tuesday, July 23, so as to afford all watchmakers and jewelers an opportunity to participate in this picnic affair, in the best interest of the profession.

Watchmakers Honor New Chief at Dinner

The Allegheny county unit of the Horological Association of Pennsylvania held a testimonial dinner in the Roosevelt Hotel June 3rd, for J. Philip Sommers, elected national president of the watchmakers' organization after five years as secretary here.

Speakers included Cecil E. Bushby, president of the county group; George Neisslien, head of the state association; Carl Victor Carlson, vice president here; Virgil Petrocelly, treasurer here; Howard Irwin, national trustee. Arthur J. Ritenbaugh of the Lawrenceville branch, Peoples Pittsburgh Trust Company, was the toastmaster.

This spirited and most sincere group of workers in the cause of the building up of their Craft, were most appreciative of the honors conferred upon one of their members by the

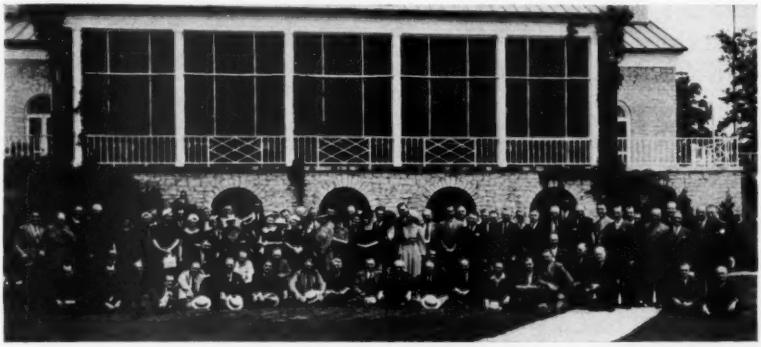
National Organization, each one signifying his desire to see a continued and healthy advance in Craft Organization and stating their unfailing desire to further aid the cause and their president.

Elgin Entertains U.P. Inspectors

The entire watch inspectors unit, consisting of about 100 technical experts, of the Union Pacific Railway spent a day visiting the Elgin National Watch Company factory at Elgin, Illinois last month to see the manufacture of the famous Elgin B. W. Raymond railroad watches.

The watch inspectors came from all parts of the country and were given a demonstration of the technical advances in timekeeping equipment that have been recently achieved at Elgin. Of especial interest was the precision processes perfected by Elgin for making its new "Timemaster" for use on the crack trains of America. This 23-jewel watch is non-magnetic, unaffected even by Diesel or electric locomotives, noncorrosive; and incorporates Elgin's patented Elginium Y hairspring, grooved balance staff and Invar balance. The railroad watch series is named for the first president of Elgin, B. W. Raymond, who served from 1865 to 1867.

The meeting of the inspectors was addressed by Frank D. Urie, superintendent of the research and inspection division of the plant, and at a luncheon at the Elgin Country Club. Howard D. Schaeffer, vice-president, served as host for the day, and James G. Shennan, general factory superintendent, escorted the railway men through the plant. The Union Pacific men were also shown the Elgin Observatory.



U. P. Group at Elgin Country Club, Elgin, Ill.

Lou Kroll Joins Longines-Wittnauer Sales Staff

LOU KROLL

Mr. Lou Kroll who for the past four years has represented Gruen Watches in New York State, is now associated with Longines-Wittnauer Watch Co., Inc. Mr. Kroll is now serving Longines-Wittnauer jeweler agencies in Michigan and adjacent territory and his extensive experience in the

jewelry business and in watch merchandising is rapidly winning him many new friends.

Horological Society of New York

Held its June meeting on 4th. Elections of officers was the highlight of the meeting which brought to-gether many of the members.

Mr. Andrew J. Park, president, opened the meeting with a report of his visit to the Horological Institute of America.

Seated, left to right: Andrew J. Park, President; W. H. Bruhwiler, Vice President. Standing: J. L. Gruener, Recording Secretary; Henry B. Fried, Corresponding Secretary; Frank Knoll, Treasurer.

Mr. Henry B. Fried, secretary, read correspondence commending the N. Y. Society for its stand in the upholding the ethics of the trade..

Those who were nominated and later elected to office were:

Andrew J. Par, President, re-elected.
W. H. Bruhwiler, Vice President, re-elected.
J. L. Gruener, Recording Secretary, re-elected.
Henry B. Fried, Corresponding Secretary, re-elected.
F. D. F. Knoll, Treasurer, re-elected.
G. Keneske and C. Johns, Trustees, re-elected.
Librarians, A. Frey, chief Lib.
Chas. A. Raez, Asst. Lib.

Seated, left to right: Executive Committeeman Joseph Sasek, H. Moriss, P. Hoffman, T. Taus, E. Stone. Standing: C. A. Ralx, Assistant Librarian; G. Keneske, Trustee; A. Frey, Chief Librarian; I. Lemer, Trustee.

Kreisler Expands

The formal opening of the new Kreisler building, 9015 Bergenline Avenue, North Bergen, New Jersey, housing its complete manufacturing facilities and its executive offices is another milestone in the progress of this 26 year old firm.

JECQUES KRIESLER, President of the Jacques Kreisler Manufacturing Corporation

The premises were occupied on July 1st and a plaque was presented by the employees of the company to Jacques Kreisler and Tobias Stern, owners of the company, in appreciation of their guidance and considera-

tion for the welfare of the firms' 300 employees throughout the last 25 years and more. The present general manager, Mr. Alfred Diringer, started with the firm 21 years ago as an office boy.

Starting originally as manufacturers of platinum Waldemar Chains, the company branched out into fine diamond and platinum jewelry. For many years the manufacture and sale of this type of merchandise earned a reputation for Jacques Kreisler Manufacturing Corporation as one of the foremost diamond and platinum jewelry houses in the United States. the increase of popularity of wrist watches the firm added another line to its business, producing a large assortment of watch attachments, and were pioneers in innovations of this type of merchandise.

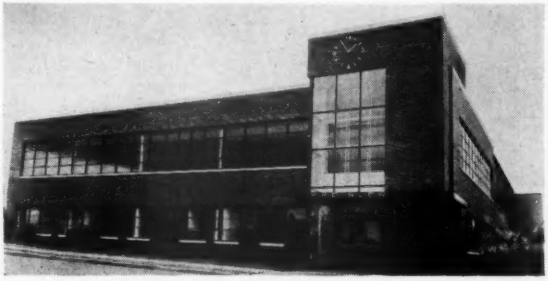
It has been the policy of the Kreisler organization to sell exclusively through retail jewelers contacted direct by the company's 15 representatives. This same policy was rigidly adhered to when the company introduced its new line of men's jewelry a year ago and national advertising has backed up the policy direct to the consumer.

This was the first time such a policy had ever been presented for men's jewelry and the complete cooperation of the retail jewelers thruout the country and their enthusiastic reception proved to the company that it was on the right track. Consequently, the company has pledged that this policy of limiting the sale of Kreisler merchandise to retail jewelers only, will never be deviated from

With the completion of its building it is now in a position to further expand in the production of fine jewelry. The new factory has 35,00 square feet on one floor devoted exclusively to manufacturing.

TOBIAS STERN, Vice President of the Jacques Kreisler Manufacturing Corporation

A show room will be maintained at the former New York address of the company, but all mail and packages should be addressed to Jacques Kreisler Manufacturing Corporation, 9015 Bergenline Avenue, North Bergen, New Jersey.



THE NEW KREISLER BUILDING, housing the plant and executive offices of the Jacques Kreisler Manufacturing Corporation, located at 9015 Dergenline Avenue, North Bergen, N.J., which will be opened formally on July 12th.

The formal opening of the new building is scheduled for July 12th and hundreds of the firm's loyal friends and customers are expected to visit this latest forward step in Kreisler history which they and other

thousands of Kreisler customers have made possible.

Elgin Announces 1941 Line

Jewelry and watch wholesalers from all over the country were guests of the Elgin National Watch Company for a day during their recent Chicago convention, at which time Elgin introduced its new 1941 models.

T. Albert Potter, president of the watch firm was host to almost ninety wholesalers who visited the huge plant at Elgin, Illinois, the largest jeweled watch manufacturing factory in the world. The guests spent most of the day going through the factory to observe the technical advances achieved there for producing precision instruments such as watches and clocks on a typically American large scale production basis. In seventy-six years before the 1941 line went into production, Elgin manufactured more than 39,000,000 watches.

Meeting at President Potter's Home.

In addition to seeing the production methods for 1941 watches, the wholesalers were shown the Elgin Watch Observatory, the only astronomical observatory maintained by any watch firm for the observation, recording and broadcasting time from the stars. They were also entertained by Elgin officials at Mr. Potter's farm situated on the outskirts of Elgin.

Mr. Potter told the visiting wholesalers:

"During 1939 we scored a forty-six per cent increase in unit sales over the preceeding year. To date, 1940 has been showing steady gains.

"Under our plans for the coming year we feel that we will be able to better our previous record. From our experience, American industry seems to have pulled itself from the slump of the depression years. Ours is a thoroughly 100 per cent American organization—96 per cent of our employees are native born and the other 4 per cent are naturalized citizens."

Prospects for the coming year were discussed by Mr. Potter and Howard D. Schaeffer, vice president in charge of sales, at a dinner meeting for the wholesalers at the Hotel Baker, in St. Charles, at which the new catalog of 1941 watch models was presented. Examples of each new watch were on display at the meeting.

Longines Hear From Watches In Antarctica

J. P. V. Heinmuller, President of Longines-Wittnauer Watch Co., Inc., has received a letter from Capt. J. Glenn Dyer, U. S. Cadastral Engineer written from Palmerland, U. S. Antarctica dated March 11, 1940, reporting on the performance of

Capt. J. Glenn Dyer, U. S. Cadastral Engineer and chief navigator for the Byrd Antarctic Expedition sent this photo to J. P. V. Heinmuller, Longines' President

Longines timepieces with the Byrd Expedition. Capt. Dyer, who is chief navigator for the expedition, wrote that he has kept a daily record of the rate of the various watches since the expedition left Boston and has noticed an increase in the variation of the rate in the high latitudes of the south polar regions. The Expedition has 16 Longines navigational timepieces including special timing watches. The Expedition is expected to return to the U. S. A. in June or July, 1941.

Handsome Two Color Counter Display Carton for New L. & R. Watch Crystal Cement

To facilitate the sale of the new L. & R. Watch Crystal Cement, the manufacturer is supplying to jobbers a most attractive self-display counter carton, printed in red and blue on a glossy buff stock.

Each display carton holds two dozen bottles which retail at 35c each.

Watchmakers may easily identify the carton which features a large L. & R. nameplate and a picture of an L. & R. Watch Cleaning Machine.

Typical of L. & R. accessories the new crystal cement, the manufacturer claims, is a superior product—waterless—does not shrink or crack, therefore can't become brittle and flake. Advance reports indicate that this new L. & R. product, too, will soon lead the field.

Indianapolis Sweepstakes Timed by Elgin

When Wilbur Shaw sped his racing automobile over the finish line to win the annual Memorial Day Sweepstakes at Indianapolis, Elgin watches were "watching" as official timepieces for the great auto classic.

And as each successive driver crossed the line for lap prizes and place money, his speed was recorded by two of the new Elgin twenty-three jewel B. W. Raymond railroad watches in the hands of Gaylord H. "Snappy" Ford, chief timekeeper. Timekeeper Ford also used the watches as the master timekeepers during two weeks of qualification speed trials in which a thousandth of a second sometimes decides whether a driver and his car will be entered in the final international gasoline derby.

The two Elgins formed the basis for actual timing of the complex, thousandth-of-a-second, electric eye, ticker tape device which records the passage of each racing car. Every morning during elimination trials on the famed two and a half mile brick and asphalt oval and also on Race Day, Timekeeper Ford received a series of telegraphic time signals from which he set and checked the watches and the timing chronometer.

When all were synchronized, the passage of a race car through the electric eye beam at the starting line flashed its time by electric impulse to the thousandth of a second on a ticker tape in the Timing stand. The passage of elapsed time in minutes and seconds was then noted on the tape by Ford, from reading of the Elgin watches.

"Snappy" is extremely enthusiastic about this system and the instruments that govern it. In a letter to the Elgin National Watch Company before this year's race, he said.

"The B. W. Raymond railroad watches are two of the most beautiful pieces of time keeping equipment I have ever seen. They have never varied a hair at the timing machine."

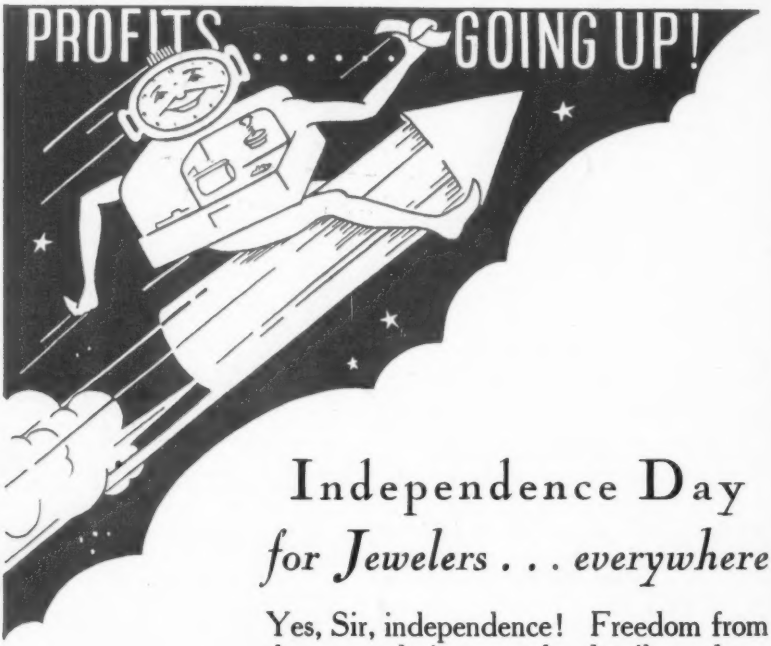
The procedure used to record the time of all thirty-three entrants in the race and their time for completing every lap of the five hour grind is interesting. When the first car broke the light beam at the start of the race, the timing device began tapping out thousandths of a second on the ticker tape. This impulse was relayed to twenty-four synchronous clocks by which the various

contestants' records were kept. Every time a car passed through the beam after that, the break was noted to show its time for another trip around the two and a half mile oval.

Adding machines are used to compute the exact time for every car on every lap of the race. from these lists, the winners of the race and their positions during the entire 200 laps are easily figured. Wilbur Shaw, for example, was shown to have won $20,000 for first place and $5,100 in lap money. Mauri Rose, who placed third, led the race for only three laps and won $300 for this and $5,000 for placing.

Even more important to the automobile industry however, which uses the races as a precise check on performance of parts, fuels, tires, engines and equipment, is the exact record of what each racing car is doing at various times throughout the race. For these purposes, the minute recordings on the timing system are all-important. And this is where accuracy of the Elgin timepieces prove their worth.

Timekeeper Ford reported that during the two weeks of qualification events and also after the final race was run, the two Elgin watches maintained second by second synchronization with the electric timing chronometer.



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